Fuel Pathway Staff Summary
Hereford Renewable Energy, LLC

Plant Summary

Hereford Renewable Energy, LLC (HRE) produces ethanol from corn and grain sorghum (also known as milo) at a dry mill plant in Hereford, Texas. The feedstock stream processed at the plant consists of an average of about one percent sorghum annually. The plant has applied for a Method 2A pathway under the California Low Carbon Fuel Standard (LCFS). The Hereford plant is an ICM-designed facility with a nameplate capacity of 105 million gallons per year of denatured ethanol. According to the Air Quality Construction Permit issued by the Texas Commission on Environmental Quality, the plant can produce up to 120 million gallons of denatured ethanol per rolling twelve-month period. The plant is a natural-gas-fired facility producing only wet distiller's grains with solubles (DGS). No energy is therefore used to dry the DGS produced.

Although the HRE plant is able to receive feedstock by rail, CA-GREET feedstock transport default values were used to calculate the plant's pathway carbon intensity (CI). Because those defaults assume truck transport of feedstock, the transportation component of the plant's proposed CI may be slightly higher than its actual CI.

Carbon Intensity of Ethanol Produced

As shown in Table 1, the applicant is applying for an LCFS Method 2A pathway with a carbon intensity (CI) of 80.34 gCO_2e/MJ. Proposed Method 2A pathways must be evaluated against reference pathways from the LCFS Lookup table. Although a Method 2A pathway must be very similar to its reference pathway, it must achieve at least a five gram CO_2e/MJ CI improvement over that pathway.[1] The reference pathway for HRE's proposed pathway is the Midwest dry mill, natural gas, wet DGS pathway, having a CI of 90.1 gCO_2e/MJ. The HRE pathway improves upon the reference pathway CI by more than the requisite five grams of CO_2e/MJ.

This CI improvement was made possible by the plant's efficient design. ICM Inc. designed the Hereford Renewable Energy plant to achieve reductions in both thermal and electrical energy consumption. As a result, it improves upon both the thermal and electrical energy consumption levels assumed for the reference pathway (22,430 BTU per gallon thermal energy use and 1.08 kW-hr per gallon for the wet DGS pathway).[2]

[1] In the LCFS regulation, this 5 gCO_2e/MJ threshold is referred to as a "substantiality requirement."
[2] Actual plant energy use values are classified as confidential business information and not reported herein.

Table 1: Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO_2e/MJ (Including Indirect Effects)		
			Direct Emission	Land Use or Other Indirect Effect	Total
Ethanol	ETHC072	2A Application*: Ethanol from 99% Corn, 1% Sorghum (milo), Dry mill, 100% NG, 100% Wet DGS	50.34	30	80.34

*Specific conditions apply

Operating Conditions– Hereford Renewable Energy, LLC (Hereford, TX)

The following will become operating conditions for this fuel pathway upon approval by the Executive Officer:

- The annual average proportion of sorghum (milo) in the feedstock stream shall not vary from the range specified in HRE's pathway documentation. Should the proportion of sorghum processed change, HRE shall not sell the ethanol associated with those changed feedstock proportions in California using the pathway described in the HRE Method 2A application.
- The total pathway-specific thermal and electrical energy use (BTU/gal) values reported in the HRE Method 2A application shall not be exceeded. These values are classified by the applicant as confidential business information. Pathway-specific energy use values may be calculated using any accounting period up to and including one year.
- Hereford Renewable Energy, LLC shall only sell ethanol to California buyers under this pathway if that ethanol is associated with 100 percent wet DGS. Any volumes associated with any level of DGS drying shall not be sold under this pathway in California.

In order for HRE to sell ethanol in California under the CI appearing in Table 1, these three conditions must be met for every gallon sold.

Staff Analysis and Recommendation

Staff has reviewed the Hereford Renewable Energy, LLC application and has replicated, using the CA-GREET spreadsheet, the carbon intensity value calculated by HRE. Hereford Renewable Energy, LLC has provided documentation verifying the plant's thermal and electrical energy use. Staff is satisfied that the energy values presented in the application accurately represent the plant's actual thermal and electrical energy consumption. Staff believes that HRE will be capable of maintaining the carbon intensity values appearing in Table 1. Consequently, staff believes that the carbon intensity value of 80.34 gCO_2e/MJ accurately represents the carbon intensity value of

ethanol volumes associated with wet DGS produced at the Hereford plant. Therefore, staff recommends that the HRE's application for a Method 2A corn ethanol pathway be approved.